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09/978,455	10/16/2001	Sergey Lamansky	10020/20702	5124

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EXAMINER
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YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 09/09/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-13

**Office Action Summary**

Application No. 09/978,455		Applicant(s) LAMANSKY ET AL.	
Examiner Marie R. Yamnitzky		Art Unit 1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 June 2003 and 25 August 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 31-51 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 31-51 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                          | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>12</u> . | 6) <input type="checkbox"/> Other:  |

1. This Office action is in response to applicants' amendment received June 18, 2003 (Paper No. 11), which amends the specification, cancels claims 1-30 and adds claims. The added claims are numbered as 31-36 and 34-48. This numbering is not in accordance with 37 CFR 1.126. Misnumbered claims 34-36 (second occurrence of each) and 37-48 have been renumbered as 37-51, respectively. The misnumbered claims that depended from claim 35 have been corrected to depend from claim 38 (previously misnumbered as the second claim 35). The misnumbered claims that depended from claim 44 have been corrected to depend from claim 47 (previously misnumbered as 44). The misnumbered claim that depended from claim 46 has been corrected to depend from claim 49 (previously misnumbered as 46).

Claims 31-51 are pending.

2. Applicants' amendment to the specification overcomes the objection to the disclosure and provides the specific reference necessary for receiving the benefit of an earlier filing date under 35 U.S.C. 119(e) and 120.

3. Claims 31 and 33-51 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The first-fifth and seventh-fourteenth formulae set forth in claim 31 were originally disclosed only in reference to the at least one mono-anionic, bidentate, carbon-coordination ligand substituted with at least one of an electron donating substituent and [or] electron withdrawing substituent. For example, see original claim 5 which depended from original claim 1, the requirement for a substituent being set forth in original claim 1. The sixth formula set forth in claim 31 was originally disclosed only in reference to the at least one mono-anionic, bidentate, carbon-coordination ligand substituted with at least one of an electron donating substituent and [or] electron withdrawing substituent, and in reference to a specific platinum compound. For example, see original claims 3 and 6. Accordingly, new claims 31, 33-36 and 38-46 encompass organometallic compounds not disclosed in the application as originally filed.

New claims 47-50 also encompass organometallic compounds not disclosed in the application as originally filed. These claims do not require the at least one mono-anionic, bidentate, carbon-coordination ligand to be substituted with at least one of an electron donating substituent and [or] electron withdrawing substituent, and are not limited to the three specific platinum compounds disclosed in the application as originally filed that do not comprise an electron donating or electron withdrawing substituent on the mono-anionic, bidentate, carbon-coordination ligand.

Support for a ligand of the third, fourth or twelfth formula set forth in claims 35 and 47 is not clear.

Support for the eleventh formula set forth in claim 37 is not clear. This formula most closely resembles the eleventh formula set forth in original claim 3 but shows a substituted

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pyridine ring where the formula in claim 3 showed a substituted benzene ring. (Note that if the substituted pyridine ring were changed to a substituted benzene ring, a compound represented by the formula would not be within the scope of the compound as defined in claim 31, from which claim 37 depends, and would be anticipated by Grushin '638).

4. Claim 35, 47 and 49-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 35 and 47 define the variables  $R_1$ - $R_8$ , but do not define the variable R. Each of the first two formulae in these claims contains the variable R.

The definition of E as set forth in claims 35 and 47 results in an improper number of bonds between the atom represented by E and the remainder of the formula containing E.

In the eighth line of claim 47, the term --non-- should apparently be inserted before "mono-anionic" since the formulae represent ligands that are not mono-anionic, bidentate, carbon coordination ligands.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 31, 33-36 and 47-50 are rejected under 35 U.S.C. 102(e) as being anticipated by Thompson et al. (US 2002/0034656 A1).

The applied reference has a common inventor with the instant application, but a different inventive entity. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Thompson's published application claims priority of several prior U.S. applications. The subject matter of Thompson's published application that is relied upon in rejecting the present claims finds support in Thompson's priority application 09/452,346, filed December 1, 1999.

Thompson et al. disclose organometallic compounds meeting the limitations of the organometallic compound as defined in one or more of present claims 31, 33-36 and 47-50, and disclose the compounds for use in the emissive layer of an organic light emitting device. See the whole published application, especially Figures 11, 22, 31, 36, 37, 39, 41, 43, 45 and 46. For example, the compound of the formula shown in Fig. 22 meets the limitations of a compound as defined in present claims 31, 33 and 34, the compound of the formula shown in Fig. 36 meets the limitations of a compound as defined in present claims 47-50, and the compound of the formula shown in Fig. 45 meets the limitations of a compound as defined in present claims 31, 33-36 and 47-50.

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7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 38, 43-46 are rejected under 35 U.S.C. 103(a) as being obvious over Thompson et al. (US 2002/0034656 A1) as applied to claims 31, 33-36 and 47-50 above, and for the further reasons set forth below.

The applied reference has a common inventor with the instant application, but a different inventive entity. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was

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made, owned by the same person or subject to an obligation of assignment to the same person.

See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Thompson et al. teach that the organometallic compounds may be used in combination with a host material to form the emissive layer of an organic light emitting device, with hole-transporting molecules being specifically taught as host materials. For example, see paragraphs [0183], [0232]-[0240] and [0251]. Guided by Thompson's teachings, it would have been within the level of one of ordinary skill in the art at the time of the invention to determine suitable host/dopant combinations for the emissive layer utilizing one or more of the organometallic compounds such as the specific compounds represented by the formulae shown in Figures 22, 31, 36, 37, 39, 41, 43, 45 and 46.

9. Claims 31-34 and 37-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi et al. (US 2001/0019782 A1) or Grushin et al. (US 2002/0121638 A1).

Igarashi et al. disclose organometallic iridium compounds for use in the light emitting layer of an organic light emitting device. The iridium compounds may be used in combination with other compounds.

Igarashi et al. suggest iridium compounds within the scope of present claims 31-34 and 37-46 although no specific examples of such compounds are disclosed. For example, the iridium compound represented by formula (1-11) contains ligands of the seventh formula shown in present claim 31. Although this specific prior art compound contains three identical ligands, Igarashi et al. clearly teach that iridium compounds suitable for the prior art invention need not



have identical ligands, and specifically disclose ligands that are non mono-anionic, bidentate, carbon coordination ligands (e.g. the bipyridine ligand in formula (1-18), the acetylacetonate ligand in formula (1-22), and the Cl and CO ligands in formula (1-40)). Ligands represented by the last three formulae shown in present claim 31 are also suggested by Igarashi et al. In particular, see formulae (1-40) and (1-41). Igarashi et al. clearly teach that the ligands of the iridium compounds may be substituted by fluorine (as in formula (1-40)) and may contain multiple substituents (e.g. see paragraph [0049]). With respect to the specific compounds represented by the formulae set forth in present claim 37, it is the examiner's position that compounds represented by the ninth, thirteenth and fifteenth formulae are suggested by Igarashi's disclosure of fluorine-substituted phenylpyridine, bipyridine, acetylacetonate and CN ligands (e.g. see formula (6) on page 2, and formulae (1-40), (1-18) and (1-22)).

Grushin et al. disclose organometallic iridium compounds for use in the light-emitting layer of an organic light emitting device. The iridium compounds may be used in combination with other compounds.

Grushin et al. suggest iridium compounds within the scope of present claims 31-34 and 37-46 although no specific examples of such compounds are disclosed. In particular, it is the examiner's position that iridium compounds containing a fluorinated phenylpyridine ligand represented by either of the last two formulae set forth in present claim 31 are suggested by Grushin et al., and a compound represented by the thirteenth formula set forth in present claim 37 is suggested by Grushin et al. The fluorinated ligand represented by the penultimate formula in claim 31 and required by the compound represented by the thirteenth formula in claim 37 is

specifically disclosed by Grushin et al. (as part of compound 1-s), and the position isomer represented by the last formula in claim 31 is clearly suggested by Grushin et al. While Grushin's compound 1-s contains three identical ligands, Grushin et al. clearly teach that iridium compounds suitable for the prior art invention need not have identical ligands, and specifically disclose ligands that are non mono-anionic, bidentate, carbon coordination ligands (e.g. acetylacetonate as in the compound represented by the thirteenth formula of present claim 37, or monodentate ligands; see paragraph [0042]).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make organometallic iridium compounds suggested by either of the prior art references other than the specific organometallic iridium compounds disclosed by the prior art. One of ordinary skill in the art would have been motivated to make other compounds within the scope of either of the references in order to provide specific compounds in addition to those explicitly disclosed by the prior art that would be suitable for use in an organic light emitting device. One of ordinary skill in the art would have recognized from the disclosure of either of the references that properties such as color of light emission could be influenced by the selection of specific ligands/specific substituents on the ligands.

With respect to the subject matter of present claims 38-46, it would have been within the level of ordinary skill of a worker in the art at the time of the invention to determine suitable and optimum combinations of host material and organometallic compound. One of ordinary skill in the art at the time of the invention would have been motivated to select particular combinations of host material and organometallic compound in order to optimize the transfer of energy from

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the host material to the organometallic compound and in order to observe light emission from the organometallic compound.

10. Applicants' arguments filed June 18, 2003 have been fully considered in making the preceding rejection over the published application of Igarashi or Grushin.

The examiner agrees that neither of these published applications would lead one of ordinary skill in the art to a light emitting device comprising an organometallic compound wherein the compound comprises a non mono-anionic, bidentate, carbon coordination ligand selected from the group set forth in claims 35, 36, 47 and 48 (with claims 49-51 dependent directly or ultimately from claim 47), and therefore has not included these claims in the statement of the rejection.

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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12. Claims 31-37 and 47-51 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 9 of copending Application No. 09/637,766. Although the conflicting claims are not identical, they are not patentably distinct from each other because there is overlap between the organometallic compound as defined in the present claims and the copending claim.

Copending claim 9 is drawn to an organic light emitting device comprising an organometallic compound represented by a formula selected from a Markush group consisting of seven specific platinum-containing formulae. Four of those specific formulae are set forth in present claim 37. Present claims 31, 33 and 34 encompass compounds represented by four of the specific formulae set forth in copending claim 9, and present claims 32, 35, 36 and 47-51 encompass a compound represented by one of the specific formulae set forth in copending claim 9.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

13. Claims 47-50 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 68-92, 94-111 and 113-116 of copending Application No. 09/981,496. Although the conflicting claims are not identical, they are not patentably distinct from each other because there is overlap between the organometallic compound as defined in the present claims and the copending claims.

Copending claims 68-92 and 94-107 are drawn to an organic light emitting device comprising an organometallic compound represented by formulae which encompass compounds having at least one mono-anionic, bidentate, carbon coordination ligand and at least one non mono-anionic, bidentate, carbon coordination ligand. Copending claims 108-111 and 113-116 are drawn to an organic light emitting device comprising an organometallic compound represented by a formula which encompasses compounds having two mono-anionic, bidentate, carbon coordination ligands and one non mono-anionic, bidentate, carbon coordination ligand. The metal of the compound of the copending claims may be osmium, iridium or platinum as specifically recited in copending claims 95-97 and 114-116. The compounds may comprise a picolate ligand as specifically recited in copending claims 92 and 111, which is a ligand represented by the first formula shown in present claims 47 and 48.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

14. Claims 31, 33-36 and 47-50 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 91-93 and 95-107 of copending Application No. 10/171,235. Although the conflicting claims are not identical, they are not patentably distinct from each other because there is overlap between the organometallic compound as defined in the present claims and the copending claims.

Copending claims 91-93 and 95-107 are drawn to an organic light emitting device comprising an organometallic compound of the formula  $L_2MX$  wherein L and X are inequivalent

bidentate ligands. Specific L ligands named in copending claim 106 include ligands represented by formulae within the group set forth in present claim 31. The X ligand may be a picolinate as specifically recited in copending claim 107, which is a ligand represented by the first formula shown in present claims 35, 36, 47 and 48. M may be a transition metal of the third row of the transition series of the periodic table (therefore, a metal having an atomic number of at least 72) as recited in copending claim 99, with iridium and platinum specifically recited in copending claims 100 and 101.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

15. Miscellaneous:

The examiner suggests that the term "heavy" be deleted from claims 33, 34, 49 and 50 since independent claims 31 and 47 define the metal in terms of minimum atomic number rather than the term "heavy".

In the second line of claims 39 and 40, the term "stated" should perhaps read --state--.

16. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (703) 308-4413. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (703) 872-9041.)

MRY  
September 05, 2003



MARIE YAMNITZKY  
PRIMARY EXAMINER

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